



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/661,653	09/14/2000	Earl R Ault	IL-10680	9212

7590

01/29/2003

Eddie E Scott  
Patent Attorney Lawrence Livermore National Lab  
PP Box 808-L-703  
Livermore, CA 94551

EXAMINER

MONBLEAU, DAVIENNE N

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 01/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/661,653

Applicant(s)

AULT, EARL R

Examiner

Davienne Monbleau

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.



PAUL IP

SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 12 July 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kocher et al. (U.S. Patent No. 5,307,358) in view of Scheps (U.S. Patent No. 5,307,358). Regarding Claim 1, Kocher et al. teach in Figure 1 a cell for use in a circulating liquid laser comprising a laser chamber/cell (12), a pumping device (22) and a liquid active material. Kocher et al. do not teach trivalent titanium ions dissolved in a liquid host. Scheps teaches in Figure 2 a laser system comprising a gain medium (11) doped with trivalent titanium ions and further teaches in column 12 lines 2-5 that said gain medium might be a liquid. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the trivalent titanium ions dissolved in a liquid host in Kocher et al., as taught by Scheps, to produce a laser output with a specific wavelength. It is known in the art that the wavelength range over which the laser system operates is determined by the dopant/dopants used in the laser gain medium and the pumping energy. (See Scheps column 5 line 66-68). Kocher et al. do not teach that said pump source (22) is a semiconductor diode. Scheps teaches in Figure 2 that said pump source (12) may be a semiconductor diode). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a diode pump source in Kocher et al., as taught by Scheps, since choosing

Art Unit: 2828

optimum pumping device involves routine skill in the art. Furthermore, optical pumping sources, such as laser diodes and semiconductor lasers are standard in the art.

Regarding Claim 2, Kocher et al. teach in Figure 1 a circulation system. It is known in the art that the wavelength range over which the laser system operates is determined by the dopant/dopants used in the laser gain medium and the pumping energy. (See Scheps column 5 line 66-68).

Regarding Claim 3, Kocher et al. teach a closed loop circulation system comprising a pump (24) and a heat exchanger (26).

Regarding Claims 4 and 5, Kocher et al. teach in columns 1-3 that said circulation system prevents the optical distortion from thermal effects. Furthermore the Applicant states in the specification on page 16 lines 1-7 that these features for reducing the thermal effect are known in the art.

Regarding Claims 6-8, the method of a device is not germane to the issue of patentability of the device itself, since the device itself obviously uses the method. Therefore the rejection used on the device in Claims 1 and 2, 4, and 5, respectively, applies also to the method of the device.

Regarding Claim 9, Kocher et al. teach in Figure 1 a liquid laser device comprising an optical cavity (10), a pumping device (22), a lasing liquid, and a circulation system with a circulation pump (24) and a heat exchanger (26). Kocher et al. do not teach trivalent titanium ions dissolved in a liquid host. Scheps teaches in Figure 2 a laser system comprising a gain medium (11) doped with trivalent titanium ions and further teaches in column 12 lines 2-5 that said gain medium might be a liquid. It would have been obvious to one of ordinary skill in the

Art Unit: 2828

art at the time of the invention to use the trivalent titanium ions dissolved in a liquid host in Kocher et al., as taught by Scheps, to produce a laser output with a specific wavelength. It is known in the art that the wavelength range over which the laser system operates is determined by the dopant/dopants used in the laser gain medium and the pumping energy. (See Scheps column 5 line 66-68). Kocher et al. do not teach that said pump source (22) is a semiconductor diode. Scheps teaches in Figure 2 that said pump source (12) may be a semiconductor diode). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a diode pump source in Kocher et al., as taught by Scheps, since choosing optimum pumping device involves routine skill in the art. Furthermore, optical pumping sources, such as laser diodes and semiconductors lasers are standard in the art.

### ***Response to Arguments***

Applicant's arguments filed 1/14/03 have been fully considered but they are not persuasive. The Applicant argues the following:

A. The Scheps reference relies upon a prism and the Kocher et al. reference circulates a liquid through the laser cavity and could not be a prism.

B. There is no teaching, suggestion, or motivation within the references to combine the Kocher system and the Scheps system.

Regarding argument A, Examiner is not implying that the prism in the Scheps reference would be incorporated into the Kocher et al. reference. The Scheps reference is used to teach that using a titanium dopant is known in the art. Since both references teach lasers comprising a liquid active medium, they are related to a similar area of art.

Art Unit: 2828

Regarding argument B, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the trivalent titanium ions dissolved in a liquid host in Kocher et al., as taught by Scheps, to produce a laser output with a specific wavelength. Both Kocher et al. and Scheps comprise liquid active materials with dopants and are thus in similar problem solving areas. Furthermore, it is known in the art that the wavelength range over which the laser system operates is determined by the dopant/dopants used in the laser gain medium. (See Scheps column 5 line 66-68).

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kocher et al. (U.S. Patent No. 3,688,216) teach in Figure 1 a circulating liquid laser comprising a cavity (10), a liquid cell (12), a heat exchanger (42) and a circulating pump (40).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 703-306-5803. The examiner can normally be reached on Mon-Fri 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Davienne Monbleau*

DNM  
January 23, 2003

*Paul Ip*

PAUL IP  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800